

We Claim:

1. A walk aerator for punching a plurality of holes in the ground, which comprises:

(a) a frame supported for movement over the ground by a plurality of wheels that define a wheelbase for the walk aerator;

(b) a handle assembly for allowing a walking operator to guide and steer the frame;

(c) a coring head carried on the frame, the coring head having a plurality of side-by-side tine assemblies that are vertically reciprocal for punching holes in the ground in a coring swath having a predetermined width; and

(d) wherein the wheelbase is substantially equal to or less than the predetermined width of the coring swath.

2. The walk aerator of claim 1, wherein the wheels are located on the frame relative to the coring head so that the wheels in a subsequent pass of the frame over a ground area do not travel over any of the holes formed by the tine assemblies of the coring head in an immediately adjacent coring swath formed in a preceding pass of the frame over the ground area.

3. The walk aerator of claim 1, wherein a pair of laterally spaced wheels are provided on the frame to define the wheelbase.

4. The walk aerator of claim 3, wherein the pair of laterally spaced wheels are longitudinally offset from a third wheel, the pair of laterally spaced wheels and the third wheel being arranged in a tricycle configuration on the frame.

5. The walk aerator of claim 4, wherein the third wheel is pivotally carried on the frame, and wherein the handle assembly is operatively coupled to the third wheel for steering the frame.

6. A walk aerator for punching a plurality of holes in the ground, which comprises:

(a) a frame supported for movement over the ground by a plurality of wheels;

(b) a handle assembly for allowing a walking operator to guide and steer the frame;

(c) a coring head carried on the frame, the coring head having a plurality of side-by-side tine assemblies that are vertically reciprocal for punching holes in the ground, wherein the coring head is vertically adjustable up and down on the frame; and

(d) a ground following control system responsive to changes in ground contour for vertically moving the coring head up and down on the frame to maintain a substantially constant depth of the holes regardless of the ground contour over which the frame is traveling.

7. The walk aerator of claim 6, further including a skid assembly which bears against the ground and which is rotatable about an axis of rotation as the ground contour changes, and wherein the ground following control system detects changes in the ground contour by being responsive to rotation of the skid assembly about the rotational axis.

8. The walk aerator of claim 7, wherein the tine assemblies pass through spaced fingers in the skid assembly.

9. The walk aerator of claim 7, wherein the ground following control system includes first and second limit switches, wherein the first limit switch is actuated when

the skid assembly rotates more than a predetermined amount about the rotational axis in a first direction of rotation, and wherein the second limit switch is actuated when the skid assembly rotates more than a predetermined amount about the rotational axis in a second direction of rotation opposite to the first direction of rotation.

10. The walk aerator of claim 9, wherein actuation of the first and second limit switches energizes an actuator to vertically adjust the coring head on the frame.

11. The walk aerator of claim 10, wherein the actuator comprises a hydraulic cylinder.

12. The walk aerator of claim 7, wherein the skid assembly must rotate more than approximately 5° in the first and second directions of rotation to actuate the first and second limit switches, respectively.

13. An aerator for punching a plurality of holes in the ground, which comprises:

(a) a frame supported for movement over the ground by a plurality of wheels;

(b) a coring head carried on the frame, the coring head having a plurality of side-by-side tine assemblies that are vertically reciprocal for punching holes in the ground, the tine assemblies being vertically reciprocated by a plurality of drive arms with one drive arm reciprocating one tine assembly; and

(c) a crankshaft for reciprocating the drive arms up and down, wherein the crankshaft has a plurality of crank arms with each crank arm being connected to an upper end of one drive arm, and wherein the crank arms forming the crankshaft are separate from one another and are removably assembled together to rotate as a single crankshaft.

14. The walk aerator of claim 13, wherein the crank arms can be disassembled from one another to allow removal and replacement of the bearings.

15. The walk aerator of claim 14, wherein the bearings comprise sealed bearings.

16. The walk aerator of claim 13, wherein at least some adjacent crank arms are fixed to each other through a resilient coupler.

17. An aerator for punching a plurality of holes in the ground, which comprises:

(a) a frame supported for movement over the ground by a plurality of wheels;

(b) a coring head carried on the frame, the coring head having six side-by-side tine assemblies that are vertically reciprocal for punching holes in the ground;

(c) a single crankshaft for reciprocating the tine assemblies, the crankshaft being driven by a single pulley.

18. An aerator for punching a plurality of holes in the ground, which comprises:

(a) a frame supported for movement over the ground by a plurality of wheels;

(b) a coring head carried on the frame, the coring head having a plurality of side-by-side tine assemblies that are vertically reciprocal for punching holes in the ground, the tine assemblies being vertically reciprocated by a plurality of drive arms with one drive arm reciprocating one tine assembly, and each tine assembly comprising at least one hollow coring tine for punching a hole in the ground and for ejecting a soil core from the top of the tine; and

(c) a curved core deflecting surface formed on the lower end of each drive arm and extending upwardly and longitudinally relative to each tine for deflecting the soil core ejected from each tine, wherein the curved core deflecting surface is formed integrally on each drive arm.

19. The aerator of claim 18, wherein each curved core deflecting surface is wide enough to extend over multiple coring tines to deflect multiple soil cores.

20. A walk aerator for punching a plurality of holes in the ground, which comprises:

(a) a frame supported for movement over the ground by a plurality of wheels;

(b) a handle assembly for allowing a walking operator to guide and steer the frame;

(c) a coring head carried on the frame, the coring head having a plurality of side-by-side tine assemblies that are vertically reciprocal for punching holes in the ground, the tine assemblies being vertically reciprocated by a plurality of drive arms with one drive arm reciprocating one tine assembly;

(d) a linkage for connecting each drive arm to the coring head, the linkage comprising a pivotal connecting link connected at a first end to the drive arm and at a second end to a first end of a biasing link, the biasing link having a second end resiliently and pivotally connected to the coring head, the first end of the connecting link connecting to the drive arm on one side of the drive arm and the tine assembly, the connecting link then extending across the drive arm so that the second end of the connecting link connects to the biasing link on an opposite side of the drive arm and the tine assembly to decrease front to back depth of the coring head.

21. The aerator of claim 20, wherein the connecting link is U-shaped.